Safety Form

Brasil-SP Team

a) Have your team members received any safety training yet?

☒Yes, we have already received safety training.

☐We plan to receive our safety training in the future (approximately when?):

☐We will not have safety training (please comment):

b) Please briefly describe the topics that you learned about (or will learn about) in your safety training.

All graduate students participating on the project have attended safety training provided by USP. Undergraduate students involved on the experiments were trained by the graduate students.

The main topics reviewed in the course were:

-Use of appropriated clothing and personal protective equipment (PPE);

-Correct use of equipments, such as: autoclave, laminar hood flow, electrophoresis chamber and centrifuge;

-Handling, safety aspects and disposal of biological and chemical agents;

-Specific danger of the main reagents used on the lab (ex. Using nitrile gloves to handle bromite);

-Precautions about bioaerosol;

c) Please give a link to the laboratory safety training requirements of your institution (college, university, community lab, etc). Or, if you cannot give a link, briefly describe the requirements.

http://www.ifsc.usp.br/cibio/legislacao-e-manuais.php

http://www.ifsc.usp.br/cibio/treinamento-em-biosseguranca.php

2. Your Local Rules and Regulations

a) Who is responsible for biological safety at your institution? (You might have an Institutional Biosafety Committee, an Office of Environmental Health and Safety, a single Biosafety Officer, or some other arrangement.) Have you discussed your project with them? Describe any concerns they raised, and any changes you made in your project based on your discussion.

Here we have an Institutional Biosafety Committee named CIBio IFSC. All the procedures applied in our team's project have been discussed with the members.
Professor Ana Paula Ulian de Araújo, has shown concern about us extracting and using Streptococcus pneumoniae DNA – which can be the cause of serious disease in humans, such as pneumonia and meningitis (risk group 2). After discussing that subject, we've adapted our initial project not to use S. pneumoniae anymore.

b) What are the biosafety guidelines of your institution? Please give a link to these guidelines, or briefly describe them if you cannot give a link.

http://www.ifsc.usp.br/cibio/legislacao-e-manuais.php

c) In your country, what are the regulations that govern biosafety in research laboratories? Please give a link to these regulations, or briefly describe them if you cannot give a link.

http://www.ctnbio.gov.br/index.php/content/view/55.html
http://anbio.org.br/site/index.php?option=com_content&view=article&id=57&Itemid=58

3. The Organisms and Parts that You Use

Please visit this page to download a blank copy of the spreadsheet for question 3. (If you need a CSV version instead of XLS, visit this page.)

Complete the spreadsheet. Include all whole organisms that you will handle in the lab, whether you are using them as a chassis or for some other reason. Include all new or highly modified protein coding parts that you are using. If you submitted a Check-In for an organism or part, you should still include it in this spreadsheet.

You may omit non-protein-coding parts, and you may omit parts that were already in the Registry if you are using them without significant modifications.

Click here to show/hide instructions for completing the spreadsheet

Upload Spreadsheet -- Please do not change the "Destination Filename"!

You may upload multiple versions of your spreadsheet. The wiki software will keep track of different versions and list them in chronological order.

4. Risks of Your Project Now

Please describe risks of working with the biological materials (cells, organisms, DNA, etc.) that you are using in your project. If you are taking any safety precautions (even basic ones, like rubber gloves), that is because your work has some risks, however small. Therefore, please discuss possible risks and what you have done (or might do) to minimize them, instead of simply saying that there are no risks at all.

a) Risks to the safety and health of team members, or other people working in the lab:

Our team's project doesn't present any major risks for the safety of anyone working directly or around it.

-Although Pseudomonas aeruginosa is an opportunist pathogen (Risk group 2), we will not handle the bacteria but only its DNA parts.

-Escherichia coli can cause health issues (irritation to eyes, skin, respiratory and gastrointestinal tract), but if it is handled with precaution, the risk is minimal. All of our students have attended safety training and are applying their knowledge on the lab.

-Bacillus subtilis is a non-pathogenic bacteria and, therefore, doesn't present any health issues.

b) Risks to the safety and health of the general public (if any biological materials escaped from your lab):

We were able to identify two main risks in this case:

- Escherichia coli could infect people by being present in the consumed water or food. In this case, the individual would probably suffer a gastrointestinal tract irritation. It would not be any different from an infection caused by E.coli originated from animal feces.

-The plasmids with biobricks contain resistance related genes. If these genes were transmitted to a pathogenic bacteria, they could cause harm to the general public.

c) Risks to the environment (from waste disposal, or from materials escaping from your lab):

No risks to the environment were detected.
As we use inducible promoters, if the trigger reactant isn't present our genic circuit is off. But even if it were on, it wouldn't cause any damage – our genetically modified bacteria doesn't release any substance; it only turns to a different color under determinate circumstances.

d) Risks to security through malicious mis-use by individuals, groups, or countries:

Our project doesn't present major risks for malicious misuse. None of the used parts has any direct relation with virulence.

e) What measures are you taking to reduce these risks? (For example: safe lab practices, choices of which organisms to use.)

-Safe lab practices;
-Use of autoclave;
-Use of chemical disinfectants such as sodium hypochlorite and Virkon powder;
-Microorganisms choice (only from risk group 1) .

5. Risks of Your Project in the Future

What would happen if all your dreams came true, and your project grew from a small lab study into a commercial/industrial/medical product that was used by many people? We invite you to speculate broadly and discuss possibilities, rather than providing definite answers. Even if the product is "safe", please discuss possible risks and how they could be addressed, rather than simply saying that there are no risks at all.

a) What new risks might arise from your project's growth? (Consider the categories of risk listed in parts a-d of the previous question: lab workers, the general public, the environment, and malicious mis-uses.) Also, what risks might arise if the knowledge you generate or the methods you develop became widely available?

The main risk arising from our project's growth would be the detection kit disposal – as it would contain the genetically modified bacteria. To minimize this, the bacteria will be physically contained in a chamber and a device that releases disinfectants agents (such as sodium hypochlorite) will be designed to activate after the detector kit has been used.

b) Does your project currently include any design features to reduce risks? Or, if you did all the future work to make your project grow into a popular product, would you plan to design any new features to minimize risks? (For example: auxotrophic chassis, physical containment, etc.) Such features are not required for an iGEM project, but many teams choose to explore them.

As answered above, our detection kit will present a physical containment chamber and a disinfectant device in order to avoid environment exposition.

6. Further Comments

If you are completing a Preliminary Version of your Safety Form, use this space to describe how far you have progressed in your project, and give some comments about any questions that you left blank.

You can also use this space for any other comments or additional material.

Our team has been working really hard on our iGEM project and we're all very excited.

We have been searching for sponsors to support our project with reagents and/or grant.
So far, we have granted sponsorship from companies such as Life and São Carlos Química.
We have also received financial help from IFSC/USP, several professors and colleagues.
Also, we've been forming partnerships with university teachers to use the labs and its equipments.

We've already got all the DNA parts, reagents and equipment we need and the initial assemblies have already been started. We still have a lot of work, but it has been a great start.